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CONJUNCTION OF MARS AND SATURN (SEPT. 20, 1889).

BY W. E. DOWNS.

The observations were made with the four-inch broken-tube comet-seeker. The times were noted on a watch running on P. S. T. A magnifying power of about thirty diameters was used.

4^h 00^m. First sight of *Saturn* and *Mars* in the telescope, through a very dense haze. *Mars* appeared as a very red, ill-defined spot of light. *Saturn* was very red, but less so than *Mars*. *Regulus* was also visible in the same field, to the south, and eight or ten times more distant from the planets than the space between them, and was of a lighter red color and fainter than either planet.

4^h 15^m. Both planets were visible to the naked eye, and easily separated as soon as seen.

4^h 25^m. *Saturn*, in the telescope, was of an orange color, and *Mars* of a light red.

4^h 45^m. To the eye *Saturn* was about as bright as *Polaris*, and *Mars* a little fainter.

5^h 15^m. Broad daylight approached fast. θ *Tauri* was still easily visible to the naked eye, and ι *Orionis*, fifth magnitude, was barely visible and disappeared at 5^h 20^m. θ *Orionis* disappeared at 5^h 23^m, and *Saturn* and *Mars* at 5^h 30^m.

5^h 40^m. *Saturn* and *Mars* were of a very light yellow color in the telescope; *Mars* being very slightly tinged with red. *Regulus* was white.

5^h 50^m. *Venus* was still easily visible to the eye. The clouds were getting ruddy in the east. *Saturn* and *Mars* were growing very rapidly fainter. After this *Regulus* was not kept in the field of the telescope.

5^h 55^m. *Mars* was easier to see than *Saturn*, the light from it being more vivid.

6^h 00^m. *Saturn* and *Mars* last seen in the telescope, and the sun's disc about two-thirds up. As the sun rose, its disc was round and red, and was crossed by horizontal cloud-belts.

6^h 05^m. *Venus* was still visible to the eye.

6^h 10^m. Lost sight of *Venus*, and did not again recover it. The sun was too far up to look at comfortably.

Regulus, *Saturn* and *Mars* formed an interesting triangular group, the angle at *Saturn* being slightly obtuse. This angle remained sensibly the same throughout the observations, although the planets were separating.

W. E. DOWNS.

MT. HAMILTON, 1889, Sept. 22.

A VERY REMARKABLE COMET.

BY EDWARD E. BARNARD.

On the morning of July 7th, a small comet was discovered by Mr. BROOKS in the constellation Cetus. The moon coming into the morning sky blotted the comet out before any observations (except three at the Lick Observatory) could be made of it. When a sufficiently long interval was obtained the orbit was computed, and from the small inclination of its path to that of the earth it was at once suspected to be periodic; the suspicion has since been verified, the comet having a period of about seven or eight years. This was sufficient of itself to make it of more than ordinary interest. While observing this object in the first part of August I discovered that it was attended by at least four companions, which were moving through space in advance of the main comet. Two of these companions were discovered with the twelve-inch on August 1st, and the other two on August 4th with the great telescope. These last two were seen several times, but always remained too faint to be measured, and finally disappeared.

The two brighter companions were perfect miniatures of the larger comet, each having a small, fairly well-defined head and nucleus, with a faint, hazy tail, the more distant one being the larger and less-developed. The three comets were in a straight line, nearly east and west, their tails lying along this line. There was no connecting nebulosity between these objects, the tails of the two smaller not reaching each other or the large comet. To all appearance they were absolutely independent comets. The four which were discovered here I have named B, C, D, E, in the order of increasing right ascension, A being the original comet discovered by Mr. BROOKS. As D and E disappeared after a few observations, they will not be again referred to; they were both north following C and in a line with it.

Since discovery I have measured these objects on every available